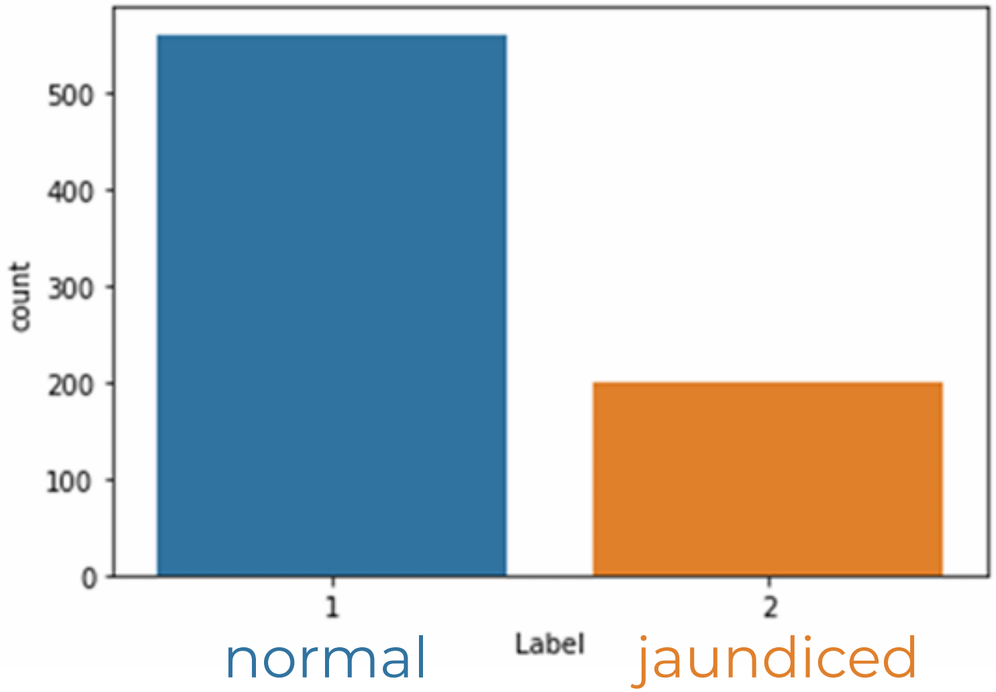
NJN: A Dataset for the Normal and Jaundiced Newborns

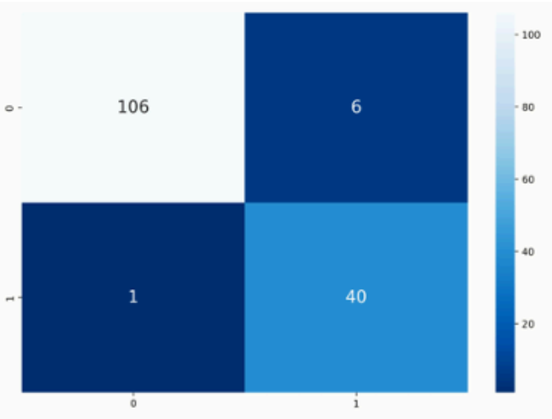
- 760 images
- 560 normal and 200 jaundiced
- 1000*1000 resolution
- iPhone 11 pro max 12 MP camera



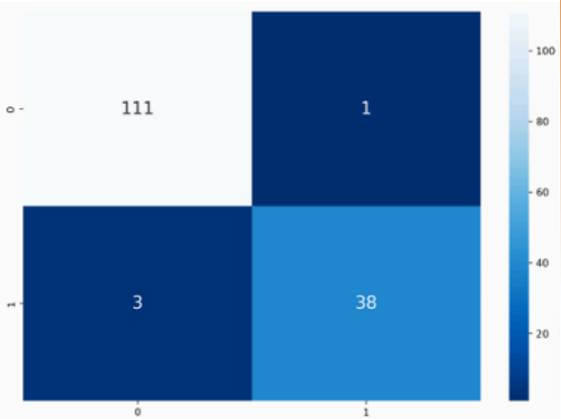
Abdulrazzak, A. Y., Mohammed, S. L., & Al-Naji, A. (2023). NJN: A Dataset for the Normal and Jaundiced Newborns. BioMedInformatics, 3(3), 543-552. https://doi.org/10.3390/biomedinformatics3030037

Classification Techniques

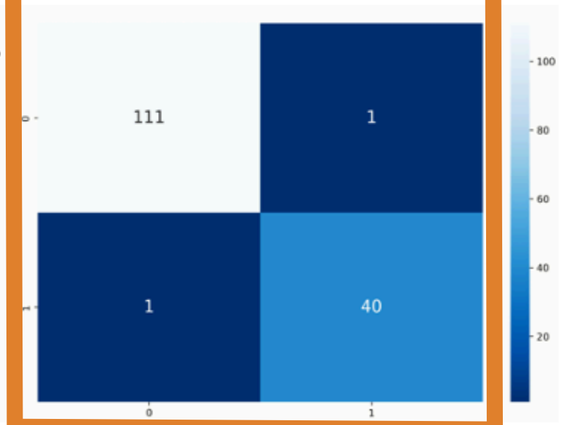
k-Nearest Neighbors(kNN)



Random Forest(RF)



XGBoost



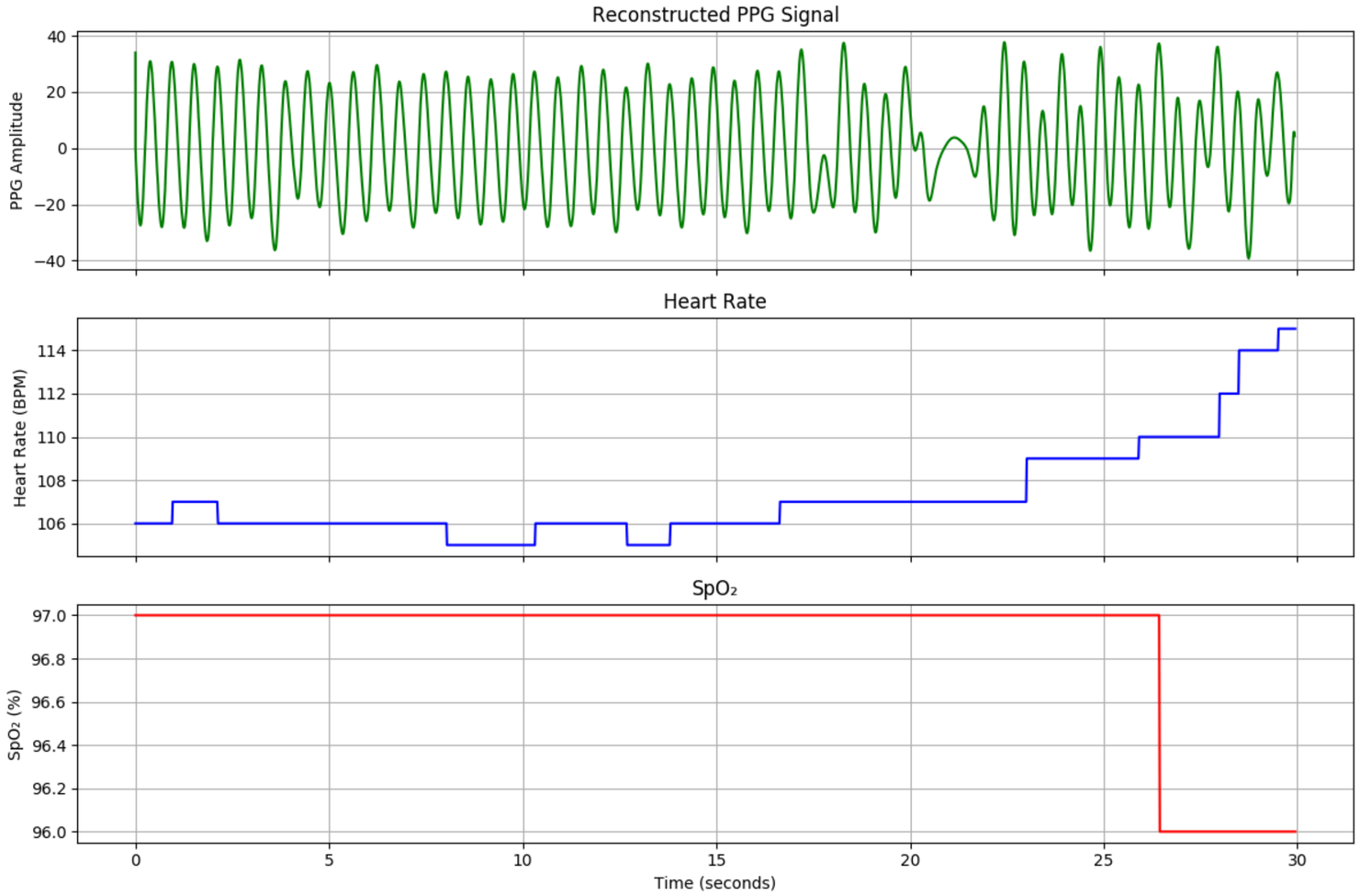
Technique	Accuracy	Precision	Recall	F1-Score
KNN	95.4%	96%	95%	96%
RF	97.3%	97%	97%	97%
XGboot	98.6%	99%	99%	99%

Abdulrazzak, A. Y., Mohammed, S. L., & Al-Naji, A. (2023). NJN: A Dataset for the Normal and Jaundiced Newborns. BioMedInformatics, 3(3), 543-552. https://doi.org/10.3390/biomedinformatics3030037

NBHR Dataset

nbhr-test > test1-reconstructed.csv

```
1  201017110742653,34,106,97
2  201017110742654,0.30674890010918193,106,97
3  201017110742667,-4.894369319053015,106,97
4  201017110742684,-10.270865619718588,106,97
5  201017110742701,-15.167022615333124,106,97
6  201017110742718,-19.35857035731617,106,97
7  201017110742736,-22.810811179883096,106,97
8  201017110742753,-25.443043766793018,106,97
9  201017110742767,-27.073100518948266,106,97
```

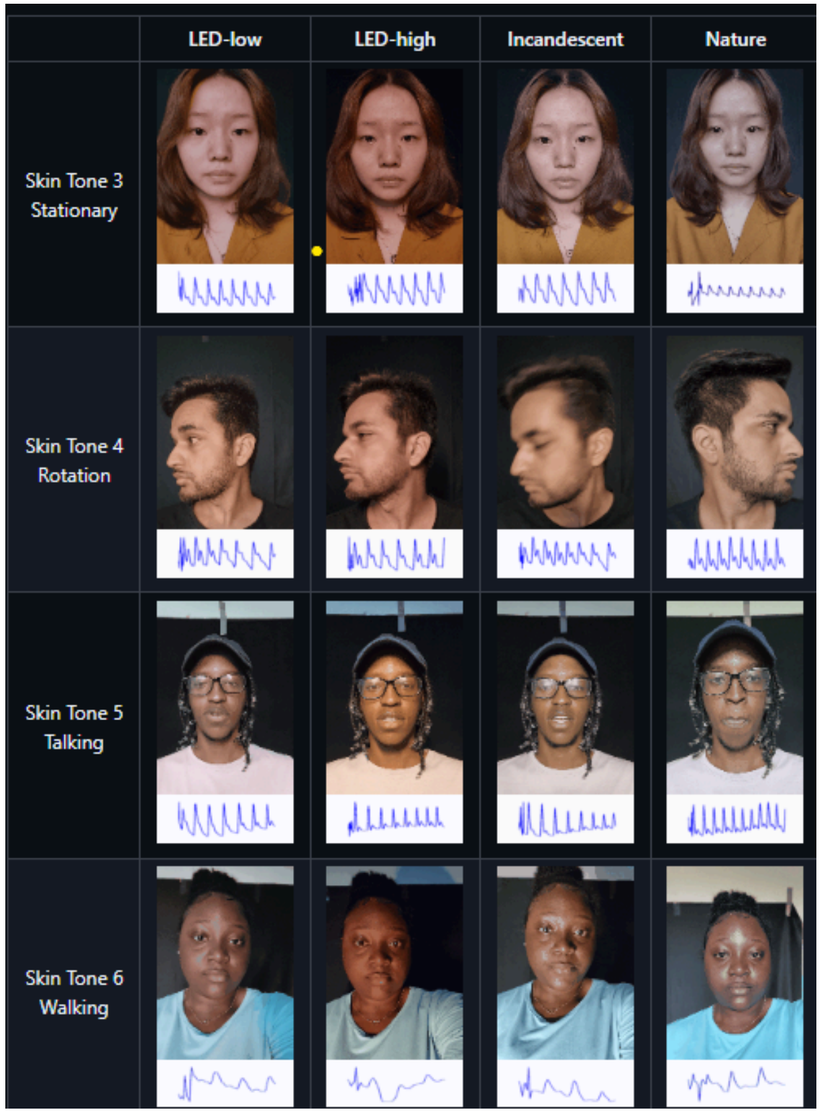


- Sample Rate : 60 fps
- Resolution : 640 x 480

B. Huang, W. Chen, C.-L. Lin, C.-F. Juang, Y. Xing, Y. Wang, and J. Wang, “A neonatal dataset and benchmark for non-contact neonatal heart rate monitoring based on spatio-temporal neural networks,” Engineering Applications of Artificial Intelligence, vol. 106, p. 104447, 2021, doi: 10.1016/j.engappai.2021.104447.

MMPD Dataset

- Full dataset(370GB, 320 x 240 resolution)
- Mini dataset(48GB, 80 x 60 resolution)
- 660 one-minute videos - 11 Hours
- 33 subjects
- Frame rate : 30 fps
- Recorded using a Samsung Galaxy S22 Ultra mobile phone



Jiankai Tang, Kequan Chen, Yuntao Wang, Yuanchun Shi, Shwetak Patel, Daniel McDuff, Xin Liu, "MMPD: Multi-Domain Mobile Video Physiology Dataset", IEEE EMBC, 2023

MMPD Dataset

TABLE III

BASELINE RESULTS ON THE MMPD DATASETS GENERATED USING THE RPPG-TOOLBOX [1]. FOR THE SUPERVISED METHODS WE SHOW RESULTS TRAINED ON THE UBFC-RPPG AND PURE.

Training Set	**UBFC** [7]				**PURE** [8]			
Testing Set	MMPD				MMPD			
	MAE↓	RMSE↓	MAPE↓	ρ ↑	MAE↓	RMSE↓	MAPE ↓	ρ ↑
Skin tone								
3	3.60	6.91	5.01	0.76	**3.06**	**6.60**	**4.06**	**0.77**
4	14.45	20.51	16.23	-0.12	8.94	15.74	9.98	0.25
5	10.06	13.72	14.11	0.45	12.39	16.51	16.74	0.12
6	14.88	20.21	16.85	0.18	15.43	20.98	17.51	0.20
Motion								
Stationary	5.34	11.17	6.32	0.56	5.91	11.56	7.13	0.54
Rotation	11.73	16.45	15.14	0.12	8.92	14.99	11.24	0.17
Talking	7.35	12.52	9.07	0.50	8.32	13.71	10.21	0.42
Walking	24.91	29.76	26.24	-0.02	27.21	31.97	28.56	0.03
Light								
LED-low	8.33	13.69	10.10	0.44	7.95	13.64	9.46	0.39
LED-high	7.92	13.18	10.14	0.40	7.80	13.37	10.00	0.37
Incandescent	8.18	13.83	10.29	0.37	7.40	13.46	9.12	0.38
Nature	10.41	16.77	12.37	0.36	11.04	17.66	12.52	0.35

MAE = Mean Absolute Error in HR estimation (Beats/Min), RMSE = Root Mean Square Error in HR estimation (Beats/Min), ρ = Pearson Correlation in HR estimation.

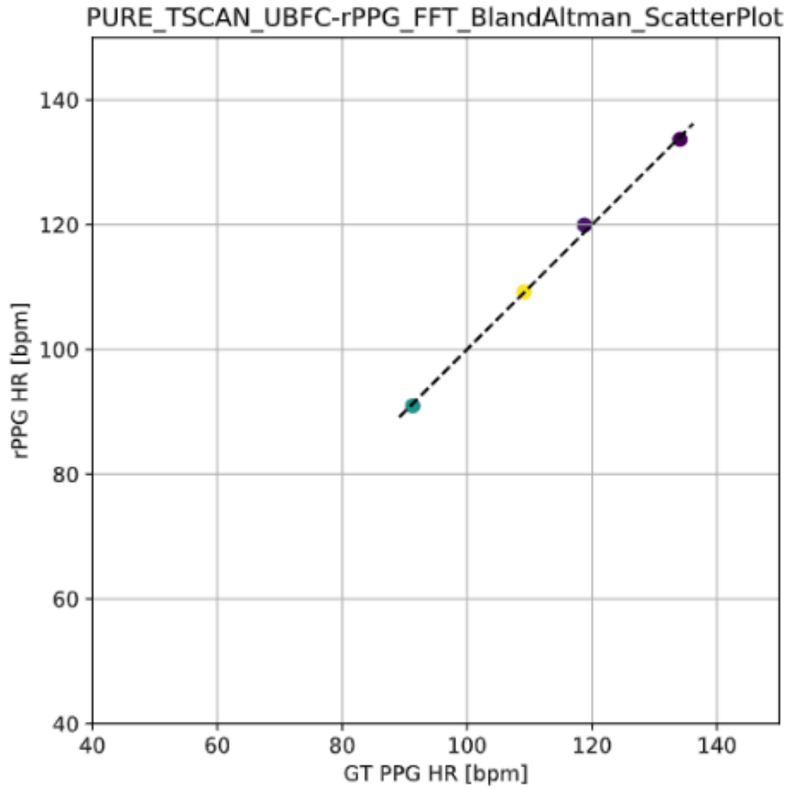
Jiankai Tang, Kequan Chen, Yuntao Wang, Yuanchun Shi, Shwetak Patel, Daniel McDuff, Xin Liu, "MMPD: Multi-Domain Mobile Video Physiology Dataset", IEEE EMBC, 2023

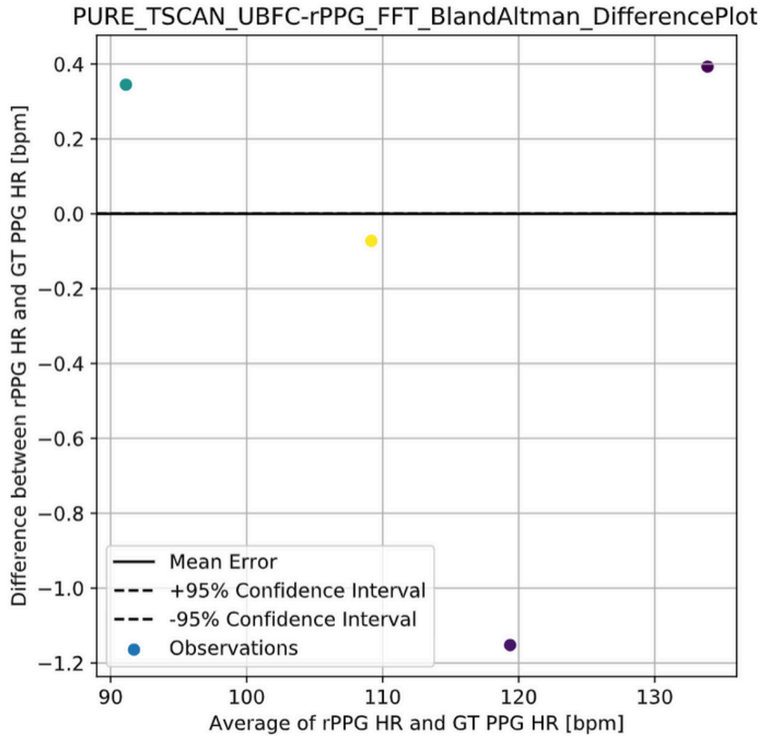
rPPG- Toolbox - Initial Setup

```
Preprocessing dataset...
  0%|                                                                                                    | 0/4 [00:00<?, ?it/s[rawvideo @ 0x35948640] Invalid buffer size, packet size 713432 < exp
ected frame_size 921600
Warning: More than one faces are detected. Only cropping the biggest one.
[rawvideo @ 0x223d7740] Invalid buffer size, packet size 115272 < expected frame_size 921600
100%|████████████████████████████████████████████████████████████████████████████████████████| 4/4 [00:15<00:00,  3.99s/it]
Total Number of raw files preprocessed: 4

Cached Data Path test/RawData/out/UBFC-rPPG_SizeW72_SizeH72_ClipLength180_DataTypeDiffNormalized_Standardized_DataAugNone_LabelTypeDiffNormalized_Crop_faceTrue_BackendHC_Large_boxTrue_Large_s
ize1.5_Dyamic_DetFalse_det_len30_Median_face_boxFalse

File List Path test/RawData/out/DataFileLists/UBFC-rPPG_SizeW72_SizeH72_ClipLength180_DataTypeDiffNormalized_Standardized_DataAugNone_LabelTypeDiffNormalized_Crop_faceTrue_BackendHC_Large_box
True_Large_size1.5_Dyamic_DetFalse_det_len30_Median_face_boxFalse_0.0_1.0.csv
  Preprocessed Dataset Length: 31


===Testing===
Testing uses pretrained model!
Running model evaluation on the testing dataset!
100%|█████████████████████████████████████████████| 8/8 [00:08<00:00,  1.07s/it]

Calculating metrics!
100%|█████████████████████████████████████████████| 4/4 [00:02<00:00,  1.44it/s]
FFT MAE (FFT Label): 0.0 +/- 0.0
FFT RMSE (FFT Label): 0.0 +/- 0.0
FFT MAPE (FFT Label): 0.0 +/- 0.0
FFT Pearson (FFT Label): 0.9999999999999998 +/- 1.4901161193847656e-08
FFT SNR (FFT Label): -1.0815034880606933 +/- 1.4777961180255634 (dB)
```

X. Liu, G. Narayanswamy, A. Paruchuri, X. Zhang, J. Tang, Y. Zhang, R. Sengupta, S. Patel, Y. Wang, and D. McDuff, “rppg-toolbox: Deep remote PPG toolbox,” Advances in Neural Information Processing Systems, vol. 36, pp. 68485–68510, 2023.

rPPG- Toolbox - Testing





X. Liu, G. Narayanswamy, A. Paruchuri, X. Zhang, J. Tang, Y. Zhang, R. Sengupta, S. Patel, Y. Wang, and D. McDuff, “rppg-toolbox: Deep remote PPG toolbox,” Advances in Neural Information Processing Systems, vol. 36, pp. 68485–68510, 2023.

Applicant CVs.

Supervisor CVs.

Request letter from the applicant

Clear details regarding the funding

Certificate of GCP training (At least 1 member)

Checklist

Consent forms 3 Languages

Information sheets 3 Languages

Letter from the Doctor

Project Proposal (8 copies and a soft copy)

Supervisor should certify that the proposal is satisfactory (Optional)